

April 13, 1960

# Investor's Reader

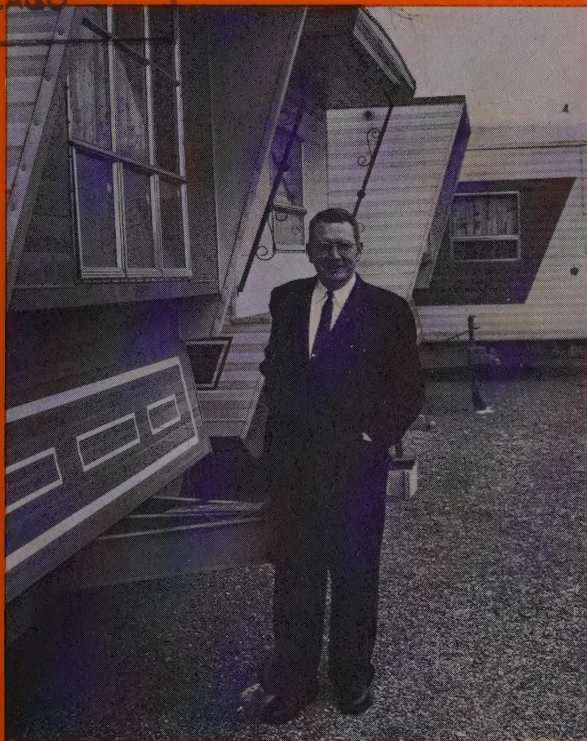
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CHICAGO

CHANCE VOUGHT'S  
TWEILER MOVES INTO  
MOBILE HOMES  
(see page 17)





## TAPED CHAOS

This sample of chaos designed expressly for this week's "Fifth International Annual Conference on Visual Communications" at the Waldorf is the joint product of two rather unusual talents: 1) Salvador Dali and 2) modern electronics. Unable to appear in person, artist Dali agreed to videotape a "message" to the New York Art Directors Club-sponsored conference: namely, a full-length exposition of how he creates a "masterpiece." The effort

started with a pig pen in whose narrow partitions were placed respectively a roaring motorcycle (unattended), a Bikini-clad model ready to scream & stomp on signal and some pigs which under the circumstances were willing to cause commotion without special stage directions.

Dali thereupon ordered 200 pounds of popcorn exploded on the scene and at just the right moment dictated by his artist's sense of timing squirted his animate & inanimate props with blood-simulating chocolate syrup. The scene thus set, the painting was accomplished by dropping the canvas over the whole ragout while men with streetcleaner brooms pressed the canvas against the squirming syrup-stained objects. The resultant syrup impressions on the canvas represented the final "painting" (visible in background) which was at least semi-appropriately titled *Chaos & Creation*.

The demonstration was taped at the Manhattan studios of Videotape Productions Inc which normally films more mundane subjects (almost entirely TV commercials though "we dabble in show business"). But even without its brief experience with Dali, the 16-month-old firm can boast of many eminent associations, chief among them Minnesota Mining & Manufacturing and Ampex Corp which each own 22 1/2 % of Videotape stock. The remaining 55% is held by president Howard S Meighan. According to vp-general manager John Lanigan, Videotape now tapes about 16-to-18 commercials a month, includes customers like General Foods, National Biscuit, Westinghouse, GE (Hotpoint), Bell & Howell, GM (both Chevy and Olds), Texaco, Shell, Firestone and Procter & Gamble.



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# Investor's Reader

No 8, Vol 34

April 13, 1960

## ***Fuel Cells Forecast Rich Power Find***

### **Research in Progress Offers Developers Bright Prospects**

**A**T SELECTED farm shows and other special gatherings (the first such took place on the company's own golf course last Fall) Allis-Chalmers proudly puts a revolutionary kind of tractor through its paces. What distinguishes it from ordinary tractors is its power source: instead of the conventional piston engine, it receives its energy from a series of 1,008 small fuel cells (see picture, pg 3).

At the US Army Electronic Proving Ground at Fort Huachuca, Ariz one of the smallest radar sets is powered by a battery of Union Carbide fuel cells, similar to the set displayed by a company scientist in the picture on page 6.

Both these examples are strictly experimental devices and even the optimists figure it will be at least five years before fuel cells are ready for

practical applications. Furthermore no one knows which of the many versions now worked on will prove feasible as a basis for future development and which will have to be almost totally discarded.

But leading chemists and engineers not to mention a boardroom full of blue-chip companies are excited about fuel cells because they convert chemical energy directly into electricity, thus promise potentially far greater efficiency as well as flexibility than conventional fuel sources.

Man has for centuries tapped the chemical energy stored within traditional fuels; first wood, then coal, oil and natural gas. But in putting this chemical energy to work, he has thrown away more power than he has harnessed. Wood and fossil fuels are first converted into heat energy, then via heat engines into mechanical energy which can finally be turned into electricity, but the final

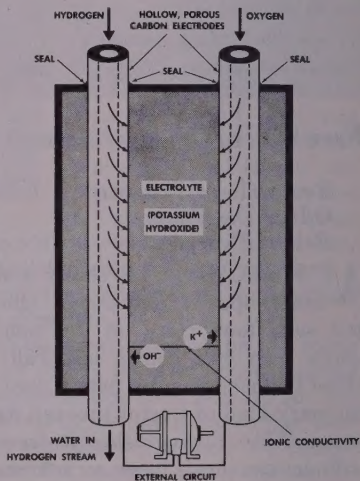
yield is substantially less than half the original chemical energy stored in the fuel. According to a basic law of thermodynamics, more than 50% of chemical energy is lost just in the operation of a heat engine. Additional energy is lost by the friction present in any machine.

Of course over the years the performance of the heat - steam - electricity cycle has been upgraded through technological research. Boilers, generators and turbines have been improved to a point where the most modern central power station now can produce electricity at an efficiency rate of 35-to-40%. Internal combustion engines now operate at a peak efficiency of 25-to-30%; high temperature gas turbines approach a maximum efficiency of 40%.

This ceiling on efficiency has encouraged power producers to investigate more direct energy conversion techniques as well as whole new categories of fuel. Unquestionably most prominent in popular fancy is atomic power. Actually all A-power projects mapped to date simply use fission as a new and more effective heat source—but need the same equipment as conventional plants to turn the heat into mechanical and electrical energy. However studies to permit direct capture of the electrical energy inherent in the splitting atom are underway.

But the atom is only one of many potential paths explored by the power scientists. And one of the most fascinating trails is the one which has brought interest to one of the oldest known sources of electric power—the fuel cell.

**Lasting Light.** Depending on the definition used, most everyone is familiar with some types of fuel cell—the ordinary dry cell flashlight battery or the wet cell storage battery in any auto. Both of these cells use expensive fuels such as zinc, lead or mercury which are refined at a considerable expenditure of fuel energy or electric power.



A more fundamental characteristic is the entire power output of these batteries is limited to the amount of energy built into them during manufacture—or when the original chemical state of the battery is artificially restored (recharged). By contrast the true fuel cell is continuously fed chemical fuels from an outside source and theoretically as long as a fresh supply of fuel is available the cell can produce electricity indefinitely. In one way, the flashlight or storage battery can be



compared to a rocket containing a specific amount of fuel which is fully consumed once the rocket is fired; the true fuel cell can then be likened to a regular cigaret lighter which will light as long as the wick is saturated with lighter fuel.

Aside from the obvious operational blessings of continuity, the outside-supplied fuel cell which makes possible direct chemical - electrical energy conversion can in theory approach an efficiency of 100%. Actual efficiency rates of 75-to-80% are now feasible; this is more than twice the average efficiency of steam power generation.

Like its flashlight and storage battery cousins, the true cell consists essentially of a positive and a negative electrode, separated by a connecting electrolyte. The fuels fed in to create a reaction between the electrodes may be any of a number of chemical compounds. But one must be an oxidizing agent such as air, oxygen or chlorine and the other a reducing agent like hydrogen, carbon monoxide, natural gas, alcohol or zinc. The process in which these two fuels react is known as oxidation-reduction and as a result of it electrons are freed and electricity (ie, a flow of electrons) is produced.

This electrochemical reaction takes place along the electrode-electrolyte surface and to increase the reaction area many cells have semi-porous electrodes of carbon, silver or nickel. To increase the efficiency and speed up the reaction, catalytic materials (such as lithium) are often added to the electrodes. Popular electrolytes include potassium hy-

droxide, sea water, alkali carbonates, phosphates, alkali halides or ion-exchange membranes; they act as electrochemical bridges connecting the two electrodes.

The basic chemistry of the fuel cell has been known for over 150 years. The British chemist Sir Humphrey Davy first investigated the possibilities of a cell using carbon and nitric acid in 1802; in 1839 another British scientist, William Grove, built the first fuel cell. Although experimentation continued on & off for the next 100 years, results were problem-plagued (chief difficulties: fuel costs, temperature and pressure regulation, corrosion problems from reactive metals); practical applications seemed well nigh impossible. But since War II research work has uncovered some interesting innovations and practical working models.

**Hydrox.** At present a substantial number of fuel cells are under study. Perhaps one of the most promising is a hydrox cell which uses hydrogen and oxygen for fuel and has electrodes of carbon or treated nickel. Two types of hydrox cells with different operating tem-

**Allis-Chalmers carbox-powered tractor**



peratures are beyond the laboratory stage of development. Union Carbide's National Carbon division has utilized its carbon know-how and developed a low operating temperature hydrox cell. The Carbide cell has been undergoing tests for over a year powering the Army's "silent sentry" portable radar sets. But its output of electric current is far below that of the Bacon hydrox cell developed by Britain's Francis Bacon (namesake and lineal descendant of the famous 17th Century scientist) at that country's National Research & Development Corp. The Bacon cell produces the greatest power output of any fuel cell but it can only produce efficiently under extremely high temperatures and pressures.

In the US the Leesona Corp of Rhode Island (primarily a textile machinery producer known until recently as Universal Winding) has exclusive patent and development rights to the Bacon hydrox cell. Leesona's Patterson Moos research division is currently working on several engineering improvements and is fabricating several Bacon fuel cell systems for military use.

Leesona is also carrying on a joint research program for space applications of the hydrox cell with the Pratt & Whitney division of United Aircraft. President Robert Leeson notes: "This is not business for tomorrow. It will take three to five years to reach the point where there is a commercial market but we think the market then will be tremendous." Or as United Aircraft chairman Jack Hor-

ner, who also sees a "tremendous potential," put it to INVESTOR'S READER last Fall: "I can assure you it's not included in the profit forecasts we made for the directors."

Other research-minded companies interested in the future of the hydrox cell are Allis-Chalmers, Chrysler and Electric Storage Battery.

**Carbox.** Another promising type of fuel cell is the carbox cell, developed by H H Chambers and A D Tantram of Britain. Its chief advantage is the utilization of cheap fuels such as carbon monoxide and petroleum hydrocarbons (even kerosene) as reductant fuels. Its oxidizing agents are also cheap—air or, for higher power output, oxygen. But like the Bacon hydrox cell, it requires high temperatures and pressures for efficient operation.

Leesona, along with its exclusive license to the Bacon cell, has US patent and development rights to the carbox cell and also extended its research program with United Aircraft to cover this cell. In addition, Consolidation Coal, General Electric, Jersey Standard and Allis-Chalmers are active in carbox type cell research.

Allis-Chalmers which combined its farm equipment and electric machinery know-how to bring out its demonstration 1,008-cell tractor does not give many clues as to its cell's constituents except to say it is powered by a mixture of gases, "largely propane." The Allis carbox cell differs from most others in that it operates at ordinary temperatures and pressures but the company is swift to note "it is still only an



experimental demonstration model."

Four other major fuel cell variants under study:

- An oxidant-reductant ("redox") system in which chemical intermediates convert the energy of the reacting fuels into electricity. The "redox" system calls for much auxiliary equipment and a complex operating device. General Electric and Lockheed Aircraft are doing research on this cell.

- A regenerative cell in which reactants are continuously reconstituted from the products formed during the cell's operation. Efficiencies are not likely to exceed those of conventional power generation systems but Mine Safety Appliances is still investigating its possibilities.

- A consumable electrode cell in which the materials act as both fuel and electrode. This system has the advantage of a low operating temperature but this is often overshadowed by the high cost of its fuel-electrode materials. Union Carbide, Aerojet, RCA, Dow Chemical and the Armour Research Foundation are working in this area.

- A cell with a plastic ion-exchange membrane which allows ions to migrate from one electrode to the other; the membrane takes the place of a liquid or semi-liquid connecting electrode. This cell (see picture) is similar to the hydrox systems, has a low operating temperature and generates substantial power in relation to its weight and size. General Electric has a study contract for an ion-exchange membrane cell from the Navy's Bureau of Ships. The small power units will be used by the

Marine Corps to power communications and radar equipment in remote regions.

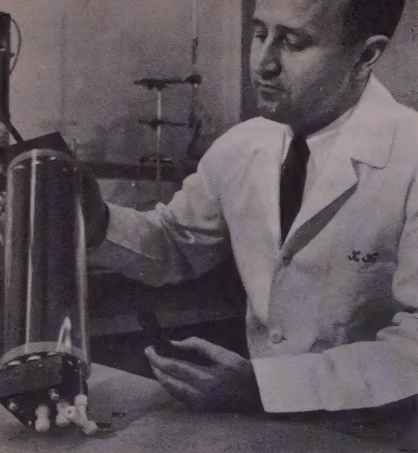
**Balance Sheet.** The main selling points for all these fuel cells is the efficiency (65-to-90%) of direct conversion of chemical energy into electricity, escaping the high energy heat loss encountered in conventional power producing equip-



**GE ion-exchange membrane**

ment. Other advantages: relatively few moving parts (in some cells, none) which makes for noiseless operation and easy maintenance; some cells are light, rugged and quite compact—also they can be readily coupled together to provide the exact power capacity desired; finally, no harmful exhaust products or waste disposal problems.

However there are also some drawbacks. Fuel cells produce low-voltage direct current which requires additional conversion equipment to get AC. They give out a steady rate of power which cannot be economically varied to meet peak or off-load conditions. Also many



**Carbide fuel cells for Army radar**

(but not all) cells are relatively heavy or bulky for the amount of power they produce. Some cells require expensive fuels and others considerable auxiliary equipment and complex regulation devices.

However once rid of its manifold engineering bugs the fuel cell can become an efficient source of new power some years hence. Of course there will be keen competition from new developments in such rival camps as atomic or solar energy, thermo-electric generators (creates electricity by applying heat to semi-conductors), thermionics (conversion of thermal energy directly to electricity) and magnetohydrodynamic generators (generation of electricity by ionized gas moving through a magnetic field as proposed by Avco—IR, Dec 9, 1959). Nor can conventional steam and hydro generation systems be written off as inevitably doomed. Relative costs (which no one can safely estimate until the various systems approach

operating status) will undoubtedly exert a major influence.

Most likely of course several systems will prove feasible with each boasting advantages for certain applications. Fuel cells for instance may come in handy where danger of atomic contamination and waste disposal problems make A-plants less desirable. Also it might be easy to package fuel cells for relatively small power needs in isolated regions or for mobile use. Ultimately fuel cells could provide self-contained power units for the home.

If fuel cells do become a major power source the first applications will almost certainly be for military projects (space and missile). At present all fuel cell research (except that of Allis-Chalmers) is backed by Government contracts. This sponsorship should speed up end results as cost factors play a minor role for the Government. Next are likely to follow applications in industries where direct current is used such as electrochemical processing, electroplating, electrolytic refining of metals (including power-devouring aluminum production) and water purification.

Then could come the possibility of fuel cells in remote underdeveloped areas where central power stations and their transmission lines would be extremely costly. And in combination with an electric motor and control mechanism, fuel cells could power automobiles, trucks, boats and locomotives—or tractors, as suggested by the early Allis-Chalmers experiment.



## BUSINESS AT WORK

### TOBACCO

#### Sniff of Mint

WITH MENTHOLATED smokes up sharply in cigaret popularity (somewhat better than 10% of the total market *v* barely 1% five years ago), leading snuff producer US Tobacco Company has decided to extend the pleasures of menthol to its clientele. Last week it brought out a wintergreen-flavored snuff called Good Luck. As a further innovation, Good Luck comes in wafers rather than the traditional powdered or fine-cut form. Enthusiastic US Tobacco plans to offer two of its established brands in wafer form as well.

### AUTO EQUIPMENT

#### New Bearings on Clevite

AMONG THE 850 massed brains of the electronic industry which exhibited at Manhattan's IRE (Institute of Radio Engineers) Convention two weeks ago was auto equipper Clevite Corp of Cleveland. Clevite specializes in sleeve and other automotive bearings and boasts "in one way or another, at least some of our bearings are used on all US-made cars & trucks." But while Clevite still counts on bearing business for around 60% of sales, its other products include a significant array of electronics items.

Electronics first entered the picture in 1952 when 1919-founded bearing builder Cleveland Graphite Bronze bought Cleveland instruments specialist Brush Development Company and streamlined its name to Clevite. Recalls president

William G Laffer: "We wanted to broaden our base." The base widened further in 1953 when a transistor company was acquired. Then late in 1957 Clevite reorganized its electronics setup, regrouped into four separate manufacturing and marketing units in this field. Today, after two years of rapid growth, Clevite's electronic base is broader than ever and beginning to contribute "significantly" to profits.

The 1957 reshuffle split Brush into Brush Instruments—since pre-Clevite days "the country's leading producer of direct writing oscillographs"—and Electronic Components. Brush specializes in 100 types of precision data processing instruments for both industry and defense. Key device for the Government is the Brush 120-channel recorder (it digests 120 different pieces of information simultaneously) which is used as "standard equipment in monitoring most missile count-downs."

Meantime Brush offshoot Electronic Components has doubled in size since 1957 and is expected to double once again by 1961. Its bailiwick is piezoelectrics, a fancy term for generation of an electric impulse from the disturbance of certain crystals. Brush was the first US company to man-make these crystals, willed its know-how to Electronic Components when this separate unit was set up. One pleasant result of this Brush pioneering is that Clevite now enjoys "proprietary rights" to materials used for sound pick-up

in most stereophonic as well as sonar equipment. Explains 52-year-old Bill Laffer: "With the boom in stereo, no one else could have produced these necessary elements at a commercially feasible price."

While the other Clevite units operate out of the Cleveland area, the Transistor Products division is Boston-based. This July it will take on an electronically elite Route 128 address as it moves into a new \$4,000,000 plant which will double capacity. By now Clevite's largest as well as fastest growing electronics unit, Transistor has the impressive record of doubling its sales every year since 1953. Though Bill Laffer cautions "there's a limit to this kind of increase," for short-term forecasting at least, it remains Clevite's most dynamic growth-tinged division. However, Transistor has also paid an expense penalty for its fast growth, moved into the black only three years ago.

Transistor produces germanium and silicon diodes and power transistors, chiefly for the computer industry. A relatively small company in a field of stiff technological competition, Transistor concentrates on carefully chosen product types with emphasis on making tested products well rather than trying new ones. This policy comes directly from boss Laffer: "We've got to be intelligent about this thing. We can't compete with the big fellows." Currently Transistor "is the country's leading producer of gold-bonded glass diodes" which cost more but react faster than tungsten versions.

Clevite Ordnance, the fourth elec-

tronics division, is over its head in underwater weapons systems research. Primarily working on development rather than production contracts, it has yet to break even, although president Laffer hopes it may surface this year. He adds: "This is one business we are not in solely to make profits."

Overall, of course, Bill Laffer looks both for more profits growth and greater stability from his drive into electronics. When the present organization was set up in 1957 the bearing business was in high gear at Clevite while electronics components contributed start-up expenses and defense cutback headaches. In 1958 electronics began to move but could not offset the tumble in bearings in that dismal auto year. Sales fell 11% to \$63,300,000 and profits were off nearly one-fourth to \$1.60 a share. However, in a way the figures do not show, Bill Laffer contends "that was the good year. We tightened our belts."

Last year the team pulled together. The bearing business was good and all electronics units had the best year to date. Result: record sales of \$86,000,000 while earnings doubled to \$6,490,000 or \$3.36 a share (the best previous year had been 1955 with \$4,850,000 profits).

The estimate for 1960 is another record year. President Laffer emphasizes the bearing business is not without growth although, with the rapid gains possibilities for the electronic units, he expects the latter may "in the near future" account for at least 50% of the business.

Clevite's 1,872,000 Big Board-



listed common shares have also marked the company's transit to electronics. They ranged between 15 and 25 in both 1957 and 1958 but last year soared to 59. In today's more subdued market they trade around 48.

## **OIL**

### **Continental Scope**

**I**N COMMON with most oil commons, the 21,000,000 shares of Continental Oil Company are rather depressed. Currently they trade around 49 on the Big Board, only four points above last year's low and 21 points below the high.

But apparently the nation's ninth-ranking oil company itself is unaware of the pessimism glutting the industry. The slate blue annual report released two weeks ago shows the three-quarter-billion assets concern last year produced more crude oil and sold more refined products and natural gas than ever before. It also made more money. Revenues rose to \$787,000,000 from \$752,000,000 while net income pushed to \$60,000,000 or \$2.85 a share from \$48,400,000 (\$2.40) in 1958. The 37,600 Continental stockholders shared in the gains as the dividends, padded by a 10¢ extra in December, reached a record \$1.70.

Sales and earnings figures for both years have been adjusted to include for the entire period the operations of one refining and three marketing companies acquired by Continental last Spring for a total of 474,000 shares. Without them 1958 sales had been only \$597,000,000, profits \$47,470,000.

The refiner taken into the Continental fold is International Refineries which runs a 13,000 barrel-a-day installation in Wrenshall, Minn. International supplies oil products to simultaneously-acquired Western Oil & Fuel Company which markets in Minnesota, the Dakotas, Iowa, Wisconsin and Canada. The other two marketers bought by Continental are Coastal Oil Company which distributes heating oils in the New York harbor area and Kayo Oil Company which sells petroleum products throughout the Southeast.

An even more significant though non-consolidated investment was made last May when Continental issued 938,000 shares for a 79.5% interest in San Jacinto Petroleum Corp. With properties mainly in Venezuela but also in Iran and the Gulf Coast area in the US, San Jacinto produced 15,900 barrels of oil and 34,400,000 cf of gas a day in 1959. This is tiny compared to Continental's average of 155,370 barrels of oil and 441,300,000 cf of natural gas but San Jacinto gives the company a firmer foothold in

### **Well-dressed Continental scientists**



the low-cost foreign crude area. Predominantly a domestic (including offshore) producer, Continental however already has some interest in such oil areas as Canada, Libya, Tunisia and Somalia.

While acquisitions add to its reserve position Continental of course does plenty of oil seeking directly. "The major portion" of this year's \$120,000,000 capital expenditures (up from \$99,000,000 in 1959) "will be devoted to finding and developing additional oil & gas reserves." However the company has a substantial stake in the growing petrochemicals field and 15% of the budget will be spent on "new ventures."

One project is a Lake Charles, La plant which is slated to produce 50,000 tons of "Alfol" annually by early 1961. Alfol is the first petroleum-derived "high-molecular-weight, straight-chain alcohol" to compete with regular alcohols developed from animal fats and vegetable oils. It will be used as an intermediate in the manufacture of detergents and plasticizers. Continental hails Alfol as a major advance "into the relatively unexplored field of aluminum organic chemistry." Its research scientists, often garbed in protective aluminized suits (see picture, pg 9), now "carry out further promising research in that field."

Another petrochemical venture is a factory to be completed this year in Ponca City, Okla. It will make cyclohexane (used in nylon) "at the rate of 65,000 tons a year." When these facilities are in operation Continental estimates its 1959

record sales of 121,000 tons of petrochemicals "should nearly double."

Yet another Continental activity is liquefied methane gas shipments. Continental and privately-held Union Stockyard & Transit Company of Chicago formed Constock International Methane to ship methane gas in liquid form (IR, Aug 20, 1958). Constock's pioneering *Methane Pioneer* made six successful voyages to Britain last year. On each trip the tanker carried 32,000 barrels of liquid methane (equivalent to 112,000,000 cf of natural gas) refrigerated to 258° below zero.

Continental believes the feasibility of this system "was conclusively demonstrated" and so evidently did the Royal Dutch/Shell Group which this January bought a 40% stake in the enterprise (Continental reduced its own interest to 40%, Union Stockyard to 20%). With this ownership shift, Constock also switched its name to Conch. Under its new title Conch now plans to construct a full-scale liquefaction plant and some more tankers to ship gas to Britain.

## FOODS

### General Mills Hatches Eggs

**B**Y VIRTUE of that hallmark of modern business — diversification—every year finds less flour in the General Mills sales recipe. The company is still the No 1 US flour miller but today flour accounts for only 42% of total sales compared with 50% five years ago and over 70% before War II.

Meantime the General Mills sales



diet grows ever richer in grocery products which include such famous brand items as Betty Crocker mixes, Bisquick, Wheaties and Surechamp dog food. The grocery brands now contribute 34% of the company's bulging overall volume v only 21% in 1954 and less than 10% before War II.

With the national branding iron waxing so warm for the Minneapolis miller it decided to try its luck on a traditionally local food item—fresh eggs. Last May the Larro feed division, whose livestock & poultry feed brings in about 13% of company sales, opened its first egg processing plant in Jackson, Miss.

In cooperation with 100 farmers in the Jackson area it initiated a program to supervise "every phase of egg production from farm to housewife." General Mills supplies nearly half a million birds plus their feed (Larro, of course) and medicines to the farmers who in turn follow strict production procedures to help insure high-quality uniformity of shell and yolk size, texture and color. The mechanized (see picture) plant can process upwards of 2,000,000 eggs a week which are then sold in Memphis, New Orleans and Birmingham under the brand name "Sure Fresh Eggs."

Roland M Hendrickson, the feed division's egg expert, offers a preliminary report: "We are very well satisfied with the operation." In fact General Mills is so pleased it opened last month a second plant in Tampa. It has already franchised processors in Minnesota, Iowa and Illinois to distribute more General Mills eggs.



**Vacuum lift packs miller's eggs**

Larro is not the only General Mills operation to make new-products news. The oilseeds division which turns out soybean products recently announced it will produce a "multi-purpose food" made from soybeans which has a big potential for institutional use. A two-ounce serving costs less than 3¢, provides one-third the daily adult requirements of protein, minerals and vitamins.

Away from food and feed, General Mills sees more growth for its chemical division which makes fatty nitrogen compounds for use in the metal, petroleum, rubber and cosmetics industries. And through the mechanical division General Mills has diversified into electronics. It developed the inertial guidance computer for the Air Force's Mace missile and the Aerocap balloon used for establishing aerial platforms. To get further into electronics and insure itself against the fluctuations of military contracts, General Mills last Fall bought Magnaflux Corp

which makes test equipment to find hidden flaws in industrial materials. Last week the miller announced plans to buy two more electronics firms, Daven Company and Laible Manufacturing.

The varied General Mills activities added to a record \$546,000,000 volume in the year ended May 1959, a 3% gain over fiscal 1958. Profits too set a record, came to \$16,800,000 or \$2.26 a share *v* \$1.98. So far in fiscal 1960, however, the giant miller has not fared as well. Due to "a rugged food business in the last eight or nine months," revenues dipped 3% to \$266,000,000 for the six months ended November. Earnings suffered more, fell to \$4,393,000 or 54¢ a share from \$7,747,000 (\$1.05). However General Mills chairman Gerald S Kennedy notes by the end of the fiscal year next month earnings will probably "not be down as much as at the half. The skies seem to be clearing a bit."

## SHIPPING

### Out of the Ice Age

**S**HIPPING on the Great Lakes is underway again as the great ore fleets fight their way through the ice floes from Chicago, Cleveland and Toledo to Minnesota and Ontario ports. Among the major ore carriers, Inland Steel vessels were first out of port but during April's first week US Steel's big Pittsburgh Steamship Company fleet and the rest were also getting up steam.

The season's more or less official start around the beginning of the month came a week or so later than last year because of the bitterly cold

epilog to an otherwise mild Winter. But a number of the intrepid sailors had begun in the last two weeks of March to venture out on intralake or other nearby missions which did not require passage through frozen locks or into ice-clogged areas.

For Canada's first intralake voyage of the season the *Imperial Windsor* on March 22 waded into the ice between Sarnia and Windsor in Ontario with a load of crude oil. Two days later on the US side the *JB Ford* owned by the Huron Portland Cement Company set off for a more ambitious 480-mile round trip from Detroit to Alpena, Mich to pick up a cargo of 40,000 barrels of cement.

Meantime the St Lawrence from Montreal north to the Gulf was ready for navigation by mid-March. Access from Halifax to the Quebec metropolis was gained March 15 while the first overseas vessel arrived March 21 to claim the traditional gold-headed cane. The Welland Canal and other key arteries between the Lakes were open for business around the first of this month or soon after. Only the opening of the St Lawrence Seaway and its locks—still about a week away—is necessary to bring the season to a full head of steam, unplugging the vital connecting link between ocean and lake.

**Season's View.** Shippers all up & down the Lakes are watching and wondering whether this season will be more rewarding than last year's qualified success. Shipping within the Lakes received a two-ply disruption from the steel strike: first the



long delay and then the final hurry-up to get shipments completed before the ice closed in (IR, Nov 25, 1959). The frenzied activity in those final weeks was such that shipping sources in Toronto anticipate overall tonnage may be no better than 1959 and possibly lower. About 6,000,000 tons of ore was shipped to Lower Lakes ports from Seven Islands late last season and forecasts are for only 4,000,000 at best this season. Similarly Steep Rock Iron Mines (IR, October 28) is expected to ship only 2,250,000 tons against 2,800,000 in 1959.

Traffic through the Seaway of 20,100,000 tons of cargo the first deep water season last year was a heartening 8,300,000 tons above the 1958 shallow channel volume but a disappointing 4,900,000 tons short of predictions. Net revenue available for debt service was about \$2,000,000 or \$714,000 short of estimates. The disappointing volume of traffic was accompanied by long delays at the Niagara Falls-bypassing Welland Canal, by serious and costly collisions of ships with lock walls and by inability of many of the ports to handle as much volume as there actually was.

The Welland Canal has been improved for the new season. Port Weller at the Lake Ontario entrance has new tie-up walls which are expected to increase its ship handling capacity by 25%.

Some shippers think the much publicized delays on the Seaway actually did not reduce tonnage handled by the system. A Toronto shipping man notes: "Apparently all

cargo eventually was handled, with the limiting factors being economic demand rather than physical transportation." Others concede this may be true but hold smoother operations might have encouraged still more traffic. Grace Lines which says it lost more than \$1,000,000 on its Great Lakes-Caribbean run last year has petitioned to suspend these operations.

The men who run the ports around the Lakes are nevertheless optimistic about the new season. Reports from Buffalo and Milwaukee point toward an improved year. The New York State port anticipates twice the number of vessels this year as last; Wisconsin's chief port looks for a 28% increase in tonnage over a year ago. A help in boosting traffic in Milwaukee will be the European trend toward supermarkets which is expected to occasion increased shipments of such commodities as lard, powdered eggs, milk, soybean oil and grains.

Chicago is predicting a 22-to-25% increase in general cargo headed to the Seaway. In Detroit shipping sources are predicting "a much larger season for incoming and outgoing ocean traffic, reflected by an increase of inquiries of shippers and potential customers showing an awakened interest in cheaper water transportation." In Toledo companies like Willys, Toledo Scale, de Vilbiss and Bethlehem Steel are getting ready for the shipping season as the Toledo-Lucas County Port Authority moves on with its building plans, developing a 65-acre site at Presque Isle which is being fi-

nanced by a \$4,500,000 bond issue.

Up & down the Lakes resolutions such as this by Milwaukee Port Director Harry C Brockel are echoing: "The results of the first Seaway year are to be viewed with satisfaction but not with complacency."

## AVIATION

### Hiller Hop

**S** MALL FISH in small ponds are often overlooked when examples are made but in a field as whimsical as whirlybirds mere survival can be exemplary. For West Coast helicopter-maker Hiller Aircraft Corp it is the case of a schoolboy's interest surviving two decades of buffeting to take a forceful role in vertical take-off & landing (VTOL) aircraft.

Hiller president Stanley Hiller Jr went into business for himself in 1940 when at age 16 he founded Hiller Industries to make gasoline-powered auto models and die-casting machines. Four years later he had built and flown America's first co-axial aircraft and the next year formed United Helicopters Inc, predecessor of the present company. Today the 35-year-old executive steers his small (\$9,000,000-assets) company in the same strata as aircraft giants 10-to-50 times its size.

In actual production Hiller has stuck mainly to light copters with a maximum gross weight of 2,750 pounds and speed of 96 mph. These three seaters are highly maneuverable, do a host of unique jobs for both industry and military use. Its main competitor is Bell Aircraft but in 1958 the Hiller H-23D "Raven" won out over Bell's H-13H for an

\$11,000,000 Army contract. The deal made Hiller the biggest Army supplier of reconnaissance-type copters which are used for precarious rescues, scouting, transport and sundry other duties. In addition 132 of the craft equip the Army primary helicopter school at Camp Wolters, Texas which graduates 100 pilots a month.

The "Raven" and its civilian version, the 12E, accounted for the bulk of Hiller's \$16,250,000 volume last year which was 23% ahead of 1958. But development costs on the 12E accounted in part for a 6% profits lapse. President Hiller explains: "We wrote off \$700,000, mainly on the E4 [a four-seat model of the 12E], in 1959 compared to \$300,000 the year before. We believe in writing everything off currently." Specifically, earnings fell to \$306,000 or 56¢ on each of 545,000 shares from 80¢ on 409,000 shares in 1958. The extra shares came from conversion of \$1,600,000 worth of bonds.

Because the Army is the biggest copter-flyer, military sales far outweigh Hiller's civilian business. But president Hiller reports: "Commercial sales were up 29% last year and we look for a 75% increase in 1960." Furthermore, "our civilian business is now money-making—if you include parts." Overall he expects "1960 sales will be about the same as last year because of old military contracts still running at a low production rate. At the end of the first quarter our military backlog amounted to \$11,000,000 and we expect it to be up to \$18,000,000 soon. We have \$700,000 worth of



**X-18 positioned for vertical take-off**

civilian orders and yet most of those sales are made off the shelf. The most important feature of the new year will be three new and improved helicopters, steps toward our goal of a family of three, four, five and six place aircraft similar to the fixed wings."

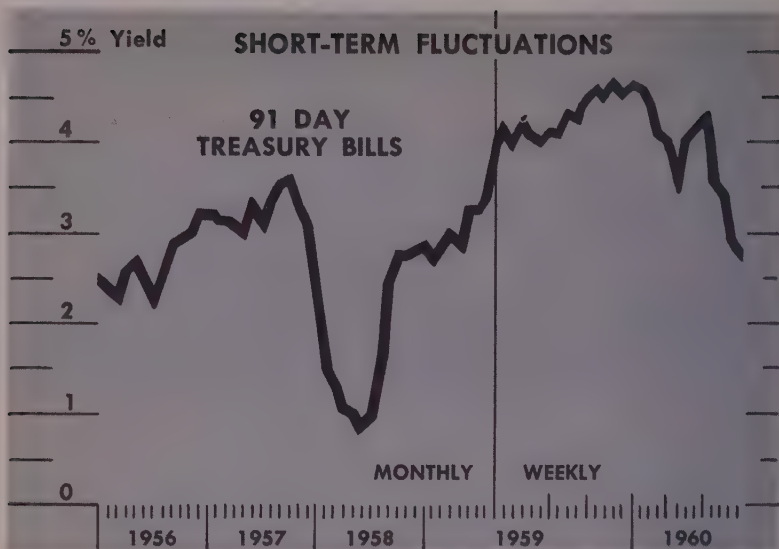
Two years ago Hiller changed its name from "Helicopter" to "Aircraft" to denote its interest in other flying machines and also in components. Newest creation embodies the concept Stan Hiller feels will become the next step in VTOL production. It is the X-18 (see picture), a tilt-wing job developed under an Air Force contract. Already successfully flown as a conventional fixed wing aircraft, the giant 16½-ton ship will in the next month or so be tested in the transition and hovering stages followed by vertical take-offs and landings. Theoretically the 400-mph turboprop craft can make the center of New York to center of Washington run in 29 minutes. Looking further into the future Hiller's advanced research division is working on pure

jet lift propulsion which would push VTOL craft into the supersonic realm.

Despite all his innovations Stan Hiller still believes firmly in the capabilities of the conventional helicopter. He feels its future adaptations and higher speeds assure the vehicle a long life. "The industry has grown wise to the unrealistic prediction of helicopters in commuter garages and hunting lodges. They really did some degree of harm because the public was primed for something that didn't come off. We have learned to properly regard the helicopter as a basic but specialized tool of industry, fulfilling a complementary role with other types of higher speed aircraft."

Whether for simple helicopters or more exotic craft, Hiller's Hiller gives the straight-up approach the nod in future skies: "I have not found anyone in my segment of the aircraft industry who disagrees that our entire air transport system will become obsoleted, in gradual stages, by the advent of vertical take-off and landing aircraft."





Amateurs engulfed with tales of tight money often fail to realize how very volatile short-term money rates can be. In the first quarter of this year short-term rates, as exemplified by the Treasury's weekly auction of its 91-day bills, have taken just about the most precipitous plunge on record. The time scale on the above chart has been spread out to show each week's yield starting last October so the decline may appear less steep (especially when compared with the monthly-plotted 1957-58 drop) than it actually was. But yields on the bills have been slashed by more than one-third in just three months from an alltime high of 4.67% Christmas week to less than 3% at the end of March.

Before the eight-month 1957-58 slide ran its full course, the total decline in the bill yields (from over 3½% to less than 1%) was of course stiffer than that experienced so far this year. But then the decline was triggered by the sudden shift of the Federal Reserve as it started to lower its discount rates; this time there has been no such obvious Fed relaxation—except perhaps that the discount rate was not hiked further (as once anticipated). Also the last big drop took place during the sharpest postwar recession; this year business has merely advanced less than widely expected.

Other sensitive short-term rates such as commercial paper have dropped along with the bills. There has also been some easing in long-term rates but it has been much milder. A typical high-grade corporate bond which sold at a 5.15% yield last Christmas, now sells to yield only 4.93%. Yield on the Government's 3¼s of 1985 during the same period eased from 4.37% to 4.07%, encouraging the Treasury last week to offer a new 25-year issue at the 4¼% statutory interest ceiling.

## **Transition Year at Chance Vought**

**Navy Plane Maker Hopes  
To Roll Ahead With  
Mobile Homes, Automation**

**W**HEN THE MEN who head Chance Vought Aircraft Company can sift the preliminary figures for 1960 some nine months hence, they will get their first concrete idea of how their plans for reshaping the long-time Naval aircraft builder are turning out. Right now they are up to their ears in hard work with two goals in mind: 1) To adapt the company's military potentialities to the Space Age and 2) guide it into two civilian businesses, mobile homes and industrial automation, as a buffer against military cutbacks.

Cutbacks are a keenly disappointing subject with Chance Vought. The Dallas company, which was spun off by Yankee parent United Aircraft in 1954, felt the stunning force of two of them within 48 hours of each other in December 1958. The Navy canceled orders for both production of the F8U-3 all-weather fighter and the Regulus II missile. The company had to let 6-to-7,000 workers go and lost \$180,000,000 of backlog "and a lot of potential business down the road—four or five year's production on the fighter for instance," according to chairman Charles Joseph McCarthy.

Deep soul searching followed. President Frederick O Detweiler (see cover), chairman McCarthy and their colleagues concluded Chance Vought should diversify into civilian business but should nevertheless keep its principal role as a supplier

of weapons systems. So before embarking on the civilian moves which have taken the company far afield from its traditional area Chance Vought set about realigning its military activities into five divisions specifically designed to take note of new defense trends: aeronautics, astronautics, electronics, range systems and research.

**Airplanes & Missiles.** The aeronautics division carries on the company's historic plane-building activities. Right now that means continued production of the carrier-based Crusader F8U-2 and F8U-2N jet fighters. Says president Detweiler: "The contracts we have now carry us into calendar 1961. We expect replenishment late this Summer or early in the Fall and production should carry on for two or three years."

Aeronautics also has responsibility for some newer-type weapons. Its people turned out the Regulus I missile and were working on the Regulus II when it was terminated. The division has responsibility for further atmospheric or "airbreathing" missile projects (as distinguished from space or ballistic missiles) and for the newly emphasized field of antisubmarine warfare. A new missile project is SLAM (supersonic low altitude missile) which carries a nuclear power plant. Chance Vought has a study contract and president Detweiler feels "it has a lot of promise."

Unearthly projects are set aside for the astronautics division. It has

assembled and delivered the first Scout unmanned research vehicle to the National Aeronautics & Space Administration. The Scout is designed to carry scientific payloads into orbit. Astronautics is also part of the Boeing team working on the Dyna-Soar project which is moving ahead "slowly." The Chance Vought division is designing the nose cone, crew compartment and escape capsule. The company hopes to be called on as a Dyna-Soar subcontractor when hardware time rolls around, still very much in the indefinite future.

The electronics division of Chance Vought partakes of an undercurrent which flows through most of the company's work, concerns itself with flight control and ground support equipment and antennas. Regulus and Crusader experience of course is valuable for such electronic jobs.

Autopilots for manned aircraft and actuating devices for missiles are also on the electronics agenda. In the latter category the company is working on a "highly advanced" actuator system for the control system of the Minuteman ICBM. Chance Vought is a subcontractor to North American which has the controls system assignment. Prime Minuteman developer is Boeing. Chance Vought is also doing ground support work on the Titan and control equipment for an unnamed space vehicle.

Founded as a result of Regulus experience, the Chance Vought range system division provides engineering and technical services to manage a missile program for a variety of users. A tracking and tele-

metering station for the Navy at Barking Sands, Hawaii is one project; another is an Air Force project in Florida and still another is an instrumentation ship for the Pacific Missile Range at Point Mugu, Cal.

To provide all these divisions with new ideas and to coordinate information coming back from them, the company set up its research division. It is now a small establishment in Dallas which the company hopes to expand rapidly. Naturally research expenditures for any air-oriented company are high and Chance Vought, in response to its cutback tribulations and the general industry trend, stepped up its outlay sharply. Expenditures for 1959 were \$7,366,000, a 65% jump over 1958. For this year an amount not quite as high but "within range" is budgeted according to finance vp Frederick M Burnham.

**Civilian Transition.** While most of Chance Vought's emphasis is still on the military, the company's officers are excited over the methods they have chosen for getting into civilian work. With mobile homes, Fred Detweiler says, "we feel we've hit on a really rapidly growing market."

To implement Chance Vought's entry into commercial fields the company established subsidiary Vought Industries Inc last November and promptly acquired three mobile home companies: ABC Coach Company of Clarion, Pa; General Coach Company of Marlette, Mich and Mid-States Corp of Battle Creek, Mich. Together these companies have about one-eighth of the mobile



home market (the industry shuns the term "house trailer") with combined sales of around \$60,000,000 in 1959. The companies have 14 plants in eight states and Canada.

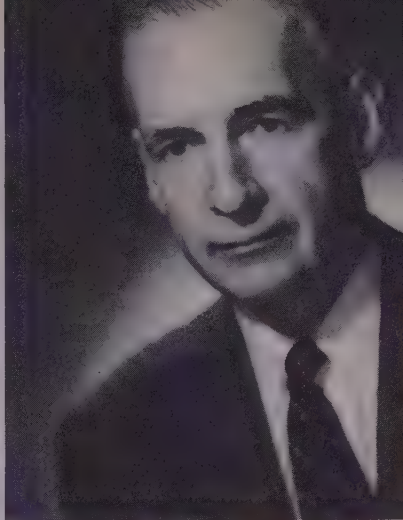
Fred Detweiler explains the rationale for the acquisitions: "The industry is supplied by regional-type outfits. We want to set up a national organization for centralized buying, national marketing and nationwide extension of credit."

**Financial Crusaders.** The company is establishing a finance company to extend credit to dealers (for their inventory) and through them to the customers who want to buy the rolling mansions on time. Name of the credit company is Crusader Finance Company, styled after Chance Vought's famous fighter.

All told Chance Vought has advanced \$13,000,000 to Vought Industries to provide funds for the acquisitions and another \$2,000,000 for the establishment of Crusader Finance. More details on the acquisition terms have not been revealed.

Market development comes high on the list for the mobile homes business. Says Fred Detweiler: "We aspire to upgrade the whole industry by promoting better trailer parks, for instance." Advertising will play an important part in this upgrading effort.

But the most important thing about the mobile home business for Chance Vought is the company expects sufficient sales and earnings from it to take up the slack from military sales in 1960. Fred Detweiler adds: "We expect profits in the mobile homes business to be bet-



**Chairman McCarthy**

ter than in the airplane business, starting pretty quick."

Not content with one entering wedge into civilian commerce, Chance Vought has embarked on a quite different field, industrial automation. It took the first step in 1958 with the establishment in California of a subsidiary called Genesys Corp ("Genesys" is a telescoping of general systems). It specializes in automation systems for oil and chemical manufacturing processes. To provide a broader scope for these operations the company recently agreed to acquire 80% of Illinois-based Information Systems Inc and its affiliate Panellit Inc in return for stock of Genesys and \$6,100,000. The deal has some complexities: Information Systems was a wholly owned subsidiary of Panellit which then acquired its parent before turning over the whole business to Chance Vought.

Chance Vought intends to inte-

grate operations of the three automation machinery companies on the West Coast but also continue part of the Panellit monitoring systems business in Chicago. Information Systems is active in the atomic field as well as chemicals and oil.

**Challenge of the Sixties.** The new ventures for Chance Vought confront the company with a shake-down year in 1960. Total volume this year is expected to be equal to or slightly above the \$254,660,000 of 1959 (despite an expected \$60,000,000 drop in aircraft volume) and earnings would continue to be in the neighborhood of \$4,900,000 or \$4.12 a share. These figures are down from \$333,200,000 sales and \$7.55 a share earnings in 1958.

The 1,189,000 shares of Chance Vought have been similarly buffeted. Now reposing around 28, they are down from 42½ in 1959 and an all-time high of 68 in 1955.

Transitions are nothing new for 58-year-old Ohio-born Fred Detweiler at Chance Vought. He came to United Aircraft in 1933 after graduating from Denison University. As assistant general manager of 1917-founded Chance Vought division of United Aircraft he was right in the thick of things when that subsidiary made its epic migration from Hartford to Dallas in 1948. (Charles McCarthy was already chairman at the time.) When Chance Vought achieved separate existence in 1954, Fred Detweiler became president. He looks on the challenge of 1960 with real eagerness. "We have a competent organization," he points out.

## MACHINERY

### Link-Belt Tightens Up

**L**IKE MANY of his contemporaries Link-Belt Company president Robert C Becherer has somewhat tempered his earlier predictions of a booming 1960. The 15% higher backlog with which the Chicago-centered maker of power transmission and materials handling equipment began the year has been reduced to 8% and although all the results are not tabulated he believes new orders during the first quarter "were a little under the same period last year."

For the first three months of 1960 president Becherer estimates volume about equal to last year's \$36,900,000 but earnings slightly below the 80¢ of the first 1959 quarter. However top man Becherer is not greatly disillusioned. He characterizes Link-Belt's output as "labor saving equipment." He feels realization of these labor saving attributes will cause people to begin to "buy our engineered materials handling systems now instead of just doing the theoretical cost analysis work with them as they did earlier. If this does materialize we will do better in 1960 than we did last year."

Last year too was one of improvement for Link-Belt. Sales rose 8% to \$153,000,000. Principal gains came in power transmission machinery (chains, bearings and speed reducers) which normally brings in one-third of total volume. Materials handling and processing equipment (conveyors, cranes, shovels, dryers) "continued at the same low rate as 1958." Link-Belt also conveyed prof-

its 4% higher to \$6,890,000 or \$3.65 a share compared with the four-year low of \$3.52 in 1958. Even so Link-Belt profit margins of 4.5% were the lowest in 13 years while earnings were still far from the highs of \$7.19 a share in 1948 and \$5.95 in 1956.

Part of the slide in margins was attributed to the non-recurring expense of moving into a 410,000-square foot roller & ball bearing factory in Indianapolis. In addition Link-Belt completed a new foundry at its Ewart plant (also in Indianapolis). President Becherer says earnings were also affected by "shipping delays requested by customers because of the steel strike and intensive competition on engineering work."

Happily the profit squeeze occasioned by the now-completed expansion program may be over and "our added capacity should now materialize in more profits." Capital expenditures in 1960 "will consist mostly of replacement of existing machinery" and the cost "will be covered by depreciation." All told Link-Belt has spent \$25,000,000 in the last three years on projects ranging from "rearranging our Philadelphia plant to building a crane & shovel factory in Woodstock, Ontario."

Despite intense competition, Bob Becherer hopes for "some price adjustment this year." Link-Belt has made some product innovations, "nothing which will add 10-to-15% to sales overnight but new items which will help us maintain and improve our market."

Among the more interesting items



**Shopper-less shopping carts**

is the Kartveyor, an underground chain conveyor to whisk groceries from the supermarket to the parking lot and then return the empty cart through the same, almost ghostly tunnel (see picture above for the installation at a Jewel Tea supermarket in Joliet, Ill.).

On the industrial side, Link-Belt recently designed and built the longest (5½ miles) permanent belt conveyor in the world. It carries limestone from the quarry to Ideal Cement's Ada, Okla. plant.

Meanwhile the 1,900,000 Link-Belt shares are in the doldrums and trade on the Big Board around 53, four points below last year's low and 20 points below the high. The 60¢ quarterly dividend was augmented by a 30¢ extra last year and at this rate the stock yields a generous 5%. Even so, the handout falls shy of the \$3.20 paid in 1957. President Becherer says: "We will continue with the present dividend through the year." But he allows: "We will review it at year-end."



## Electronics Duo Teams for Future

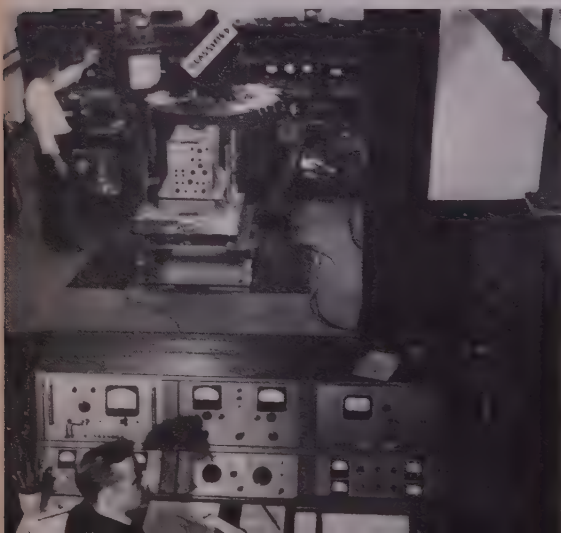
### ECI Adds Maxson in Bid For Big Time

**O**NE PROSPECTIVE COUPLE willing to waive the proverbial blessings of a June nuptial if it can effect a speedier union is Electronic Communications Inc of St Petersburg, Baltimore and Santa Barbara and W L Maxson Corp of Manhattan and Old Forge, Pa. The respective stockholder families plan to meet early next month and the principals hope to seal the marriage before the end of May.

Last week ECI (Amex ticker symbol) chief Frank Waldman Godsey Jr made a quick trip north to go over plans with Maxson president Walter Hubert Beal. He commented on the planned union: "These two companies fit as well or better than any other two in the military equipment business you could select."

#### *Maxson researchers check missile's 'white noise'*

IR PHOTO BY TRICK



ECI, as its name implies, makes primarily electronics communication equipment—transmitters, receivers, data link devices and the like plus some electromechanical products. These have gone into the McDonnell F-101, Convair F-102 and F-106 plus the SAGE air defense network.

Maxson is in electronic servo-mechanisms—guidance systems, radar, etc. It supplies the guidance system for the Navy's Corvus air-to-surface missile, does work on the Hercules and Hawk plus a couple of others which, Hube Beal notes, "are classified. I wish I could tell you about them." Thus the two companies dovetail with little overlap.

ECI president Godsey further notes: "We are both an uncomfortable size. We've both been competing for large subsystem contracts with companies far bigger than we were. Now we'll be better able to compete with some of the giants with a more complete weapons system capability."

But perhaps the best tie-in of all is the blend of Maxson's engineering and manufacturing facilities with ECI's research work, much of which is just beginning to bear fruit. Three years ago ECI established a research plant at Timonium, Md whose work "might lead to compatible diversification."

One big area: elec-

tronic countermeasures. One of the first production results of the research division is a countermeasure subcontract which ECI expects sometime this year. Electronics in this category "fits into our St Petersburg plant and will be channeled there."

The other big research area at Timonium is systems for heavy, ground-based radar, a new field for ECI and one which found it with no production facilities. Notes Frank Godsey: "We have a lot of people with radar experience and capabilities but no place to turn out the goods." Now with Maxson's engineering capability and radar production facilities "we're off to a running start. We don't have to start from scratch."

Maxson radar is what Maxson president Beal calls "the sophisticated type \* \* \* There are kinds and kinds of radar." One example is its Air Height Surveillance system which is being installed for testing at the National Aviation Facilities proving grounds in Atlantic City. Maxson has a \$1,700,000 contract from the FAA to develop this three-dimensional (distance, direction and height) system which outdates the old two-dimensional (just distance and direction) systems.

Another nice fit is with ECI's Advanced Technology subsidiary (acquired last July). The 17 AdTec scientists are "space technology types, experts in an area we wanted to move into." Frank Godsey adds: "We'll keep them busy trying to get contracts and Maxson's Old Forge plant is the perfect production facility." Maxson is also quite active



**ECI's Godsey eyes Maxson's Beal**

with its own research, centered around its R&D division in New York and environs.

**Common Commerce.** No newcomer to defense business, 1927-founded ECI began to supplement its original aviation hardware supply business during War II. Maxson dates its military service back to its 1935 founding. But both companies also bring a number of commercial ventures into the merger. ECI still does a thriving commercial aircraft equipment supply business—everything from radio and navigation equipment to aircraft tires, flight instruments and seat belts.

On another tack it has an item which "we think will be very desirable and profitable." This is the Electronic Messenger, a low-speed facsimile system of interest to the post office (for its inter-office memos, not letters) and other message-happy organizations.

Maxson in turn has a whole host of other products—radio & TV amplifiers and other electronic apparatus; phasemeters, power oscillators, etc; electrical, hydraulic and automatic test equipment. Also Uni-

max switches whose applications are "almost as broad as business itself" in vending machines, industrial timers, home appliances, aircraft.

Under the merger each of the 740,000 Maxson shares (now around 13 over-the-counter) will be exchanged for four-sevenths of an ECI share. The exchange will raise ECI's common capitalization from 590,000 shares to 1,010,000. ECI now trades around 24 on the Amex. Ahead of the common will be \$116,000 in ECI's long term debt and 44,300 shares of 60¢ preferred, convertible into 1½ common shares each. Maxson has no debt or preferred.

While Maxson had paid a nominal 5¢ quarterly dividend since last year ECI will not adopt this policy. "We're a growth company and we want to put all our earnings back into the business."

**Lower Load.** ECI's \$32,800,000 sales for the year ended last September and Maxson's \$18,500,000 volume for the same fiscal year adds to \$50,000,000 for the combined outfit. But Frank Godsey declares things will not be that good this year. He figures fiscal 1960 sales more in the neighborhood of "\$40,000,000-plus." The reason: "Last year we accelerated some contracts which all lumped into the last quarter and gave it an abnormal bulge. This year

some of the new business contracts we expected have been delayed."

One which just came in and, according to ECI, has great potential: a \$9,500,000 subcontract from Burroughs Corp for work on its Airborne Long Range Input, a missile & aircraft detection system. Frank Godsey is most optimistic about this contract, expects it to increase "to around \$13,000,000 this year and it could get up to \$30,000,000 in the next few." Looking ahead he asserts the company can get up to a \$100,000,000 sales goal in two years. "We are almost half way and we'll go just as fast as we can."

Earningswise too the expanded ECI may be somewhat of a disappointment in fiscal 1960 since it is digesting a lot of research work which has yet to show up in profits. Last year ECI profits came to \$855,000 or \$1.40 a share, up from \$424,000 (98¢ on fewer shares). Maxson earned \$601,000 (81¢) v a 1958 loss of \$632,000.

But Frank Godsey notes with enthusiasm: "We're out to make as much money as fast as we can. As a larger company we'll be in a position to bid on prime contracts. We're thus not quite so vulnerable as when we had to subsist on subcontracts. We like subcontracts but we like prime ones better."

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## Investor's Reader Staff

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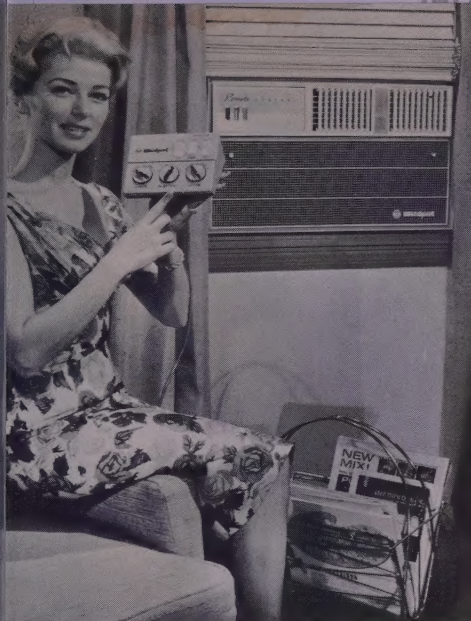
## Contributors

Edwin O Cartwright, *Dallas*  
Robert Mentch, *New York*  
Joseph H Mizzi, *Detroit*  
Ann N Papa, *Milwaukee*  
Thomas B Ross, *Toledo*  
Philip Speller, *Toronto*

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## WHIRLPOOL WIZARDRY

This attractively designed accessory displays the latest gimmick for control of air conditioned comfort — a movable remote control panel to regulate temperature, air intake and circulation. Whirlpool Corp will offer this push button control on premium model air conditioners starting next month. Extra cost: about \$100 list.

Whirlpool also has other plans to make life easier for homemakers and richer for stockholders. Last month it brought out a new series of "service free" gas refrigerators;

this Summer it will introduce "Blanket of Flame" gas ranges. Perhaps best known for its full line of electric appliances, Whirlpool has also been active in gas and president Robert Elton Brooker pinpoints some advantages: "Gas appliances are silent, require no service and are often cheaper to operate."

President Brooker also provides some near-term reassurance for cost-conscious consumers. "I see no trend to increase appliance prices at the moment but as the year progresses prices will tend to increase as the varied effects of the steel strike are taken into account."

The effects of the steel strike however did not block Whirlpool from record sales and earnings last year. Despite a fourth quarter drop, sales reached \$430,500,000, a 6% increase over 1958; earnings doubled to \$20,480,000 or \$3.18 a share from \$10,180,000 or \$1.54. And for 1960, president Brooker adds: "The industry as a whole will be pretty much the same as last year but we should do slightly more than our record sales and earnings scored in 1959."

Supporting President Brooker's optimism are two Whirlpool builtin pluses — the company's affiliation with Sears, Roebuck (which owns 17% of its common) and RCA (owns 19%). Some 60% of Whirlpool output is sold under Sears' Kenmore label while the rest of the products bear the joint RCA-Whirlpool title.

**This is a news and educational publication about financial and business matters. Articles are selected for their news or general interest and should not be considered a recommendation to buy or sell securities.**

## SEVEN-YEAR CYCLE

Once every seven years, we are told, each of us gets a new body. Not all at once, of course. The whole process of replacement of all our cells takes seven years and is constantly going on.

The chances are that you also replace most of your clothing and your automobile in that length of time, and you may change jobs and living places as well. Most of us like to keep abreast of new developments, too, knowing that the world around us is in a state of flux, just as we ourselves are.

If there's one respect above all others in which we believe that people should keep up with the world, it's in investing. It's all very well to buy securities for the long term and put them away, but it's far from wise to forget about them. You should review them yourself or have them reviewed for you periodically to see whether they still suit both you and the times.

Our Research Department will review your holdings for you if you like. There's no charge for this service, so you have nothing to lose. And you are under no obligation to act on their suggestions unless you want to do so. Just write a letter about yourself, your situation, and your holdings.

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